



```
#include <Servo.h>
```

```
int output1Value = 0;  
int sen1Value = 0;  
int sen2Value = 0;  
int const gas_sensor = A1;  
int const LDR = A0;  
int limit = 400;
```

```
long readUltrasonicDistance(int triggerPin, int echoPin)  
{  
    pinMode(triggerPin, OUTPUT); // Clear the trigger  
    digitalWrite(triggerPin, LOW);  
    delayMicroseconds(2);  
    // Sets the trigger pin to HIGH state for 10 microseconds  
    digitalWrite(triggerPin, HIGH);  
    delayMicroseconds(10);  
    digitalWrite(triggerPin, LOW);  
    pinMode(echoPin, INPUT);  
    // Reads the echo pin, and returns the sound wave travel time in microseconds  
    return pulseIn(echoPin, HIGH);  
}
```

```
Servo servo_7;
```

```
void setup()  
{  
    Serial.begin(9600); //initialize serial communication  
    pinMode(A0, INPUT); //LDR  
    pinMode(A1, INPUT); //gas sensor  
    pinMode(13, OUTPUT); //connected to relay  
    servo_7.attach(7, 500, 2500); //servo motor  
  
    pinMode(8, OUTPUT); //signal to piezo buzzer  
    pinMode(9, INPUT); //signal to PIR  
    pinMode(10, OUTPUT); //signal to npn as switch  
    pinMode(4, OUTPUT); //Red LED  
    pinMode(3, OUTPUT); //Green LED  
}
```

```
void loop()  
{  
    //-----light intensity control-----//  
    //-----  
    int val1 = analogRead(LDR);  
    if (val1 > 500)  
    {  
        digitalWrite(13, LOW);  
        Serial.print("Bulb ON = ");  
        Serial.print(val1);  
    }  
    else  
    {  
        digitalWrite(13, HIGH);
```

```

    Serial.print("Bulb OFF = ");
    Serial.print(val1);
}

//-----
//----- light & fan control -----//
//-----
sen2Value = digitalRead(9);
if (sen2Value == 0)
{
    digitalWrite(10, LOW); //npn as switch OFF
    digitalWrite(4, HIGH); // Red LED ON, indicating no motion
    digitalWrite(3, LOW); //Green LED OFF, since no Motion detected
    Serial.print("    || NO Motion Detected    ");
}

if (sen2Value == 1)
{
    digitalWrite(10, HIGH); //npn as switch ON
    delay(3000);
    digitalWrite(4, LOW); // RED LED OFF
    digitalWrite(3, HIGH); //GREEN LED ON , indicating motion detected
    Serial.print("    || Motion Detected!    ");
}
delay(300);

//-----
//----- Gas Sensor -----//
//-----
int val = analogRead(gas_sensor); //read sensor value
Serial.print("|| Gas Sensor Value = ");
Serial.print(val); //Printing in serial monitor
//val = map(val, 300, 750, 0, 100);
if (val > limit)
{
    tone(8, 650);
}
delay(300);
noTone(8);

//-----
//----- servo motor -----//
//-----
sen1Value = 0.01723 * readUltrasonicDistance(6, 6);

if (sen1Value < 100)
{
    servo_7.write(90);
    Serial.print("    || Door Open! ; Distance = ");
    Serial.print(sen1Value);
    Serial.print("\n");
}
else
{
    servo_7.write(0);
}

```

```
Serial.print("    || Door Closed! ; Distance = ");
Serial.print(sen1Value);
Serial.print("\n");
}
delay(10); // Delay a little bit to improve simulation performance
}
```